

REMARKS

A. Background

The Office Action, mailed January 25, 2007, considered and rejected claims 1-15. Claims 1-10 and 12-15 were rejected under 35 U.S.C. §102(e) in view of cited art, while claims 5-7, 11 and 13-15 were rejected under 35 U.S.C. § 103(a) in view of cited art¹. By this paper, claim 1 has been amended and claims 16-20 being added.² Accordingly, following this paper, claims 1-20 remain pending, of which claims 1 and 16 are the only independent claims at issue. Applicant respectfully traverses.

B. Rejections under 35 U.S.C. §102(e) and 35 U.S.C. § 103(a)

Claims 1-3, 8, and 12 were rejected under 35 U.S.C. 102(e) as being anticipated by *Izraelev* (U.S. Patent 5,686,700), while claims 1-10 and 12-15 were rejected under 35 U.S.C. 102(e) as being anticipated by *Schulte Eistrup* (U.S. Patent 6,752,602). Applicant respectfully traverses.

Izraelev discloses a Bearing and Seal-Free Blood Pump that transfers "fragile and aggressive liquids such as human blood" (Title and Abstract). The "rotor 20 [of the *Izraelev* patent] is disposed within chamber 12 and has a symmetrical dual conical configuration. This configuration provides dual cones converging toward opposed polar regions 21 and 22" (Col. 4, ll. 30-33). "The base of each of the two cones formed in the dual cone configuration are coupled together and form a common center plane" (Col. 4, ll. 35-37).

Schulte Eistrup discloses "a blood pump, in particular a ventricular cardiac support pump" (Abstract). "[A]ccording to a first embodiment . . . the pump housing 10 [has] an essentially octagonal blood chamber 12 in the axial section view shown, which in the manner of a double cone forms at both ends, at pointed ends, a left 14 and right inlet 16" (Col. 6, ln. 65-col. 7, ln. 2).

Neither *Izraelev* nor *Schulte Eistrup* teach or suggest "a pump housing configured to be inserted into a heart of the patient using a minimally invasive procedure, said pump housing

¹ Although the prior art status of the cited art is not being challenged at this time, Applicant reserves the right to challenge the prior art status of the cited art at any appropriate time, should the need arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of the cited art.

² Support for the claim amendments and new claims can be found throughout the specification.

having at least two blood inlets, at least one blood outlet, and a rotor chamber extending between said two blood inlets and said blood outlet" as claimed in independent claim 1. *Izraelev* references that the device can "function[] as an implantable unit" or "as a ventricular or heart-assist device", but no mention is made of *Izraelev*'s device being "configured to be inserted using a minimally invasive procedure." Similarly, *Schulte Eistrup* references the blood pump as "a ventricular cardiac support pump", but no mention of it being "configured to be inserted using a minimally invasive procedure."

Turning to Claim 16, neither *Izraelev* nor *Schulte Eistrup* teach or suggest "each of said at least two blood inlets tapering from a first end toward a second end, said second end communicating with said rotor chamber." In contrast, both *Izraelev* and *Schulte Eistrup* teach that each blood inlet is the end of a cone, with the base of each cone being toward the center of the rotor chamber, i.e., tapering from center of the rotor chamber to the blood inlet. This is the opposite of the configuration claimed in independent claim 16.

Accordingly, Applicant respectively submits that pending claims 1-10 and 12-15, and new claims 16-20, as amended and presented herein, are neither disclosed in *Izraelev* and *Schulte Eistrup* nor obvious variations of the devices disclosed therein. Accordingly, it is respectfully submitted that claims 1-10 and 12-15, and new claims 16-20, as amended and presented herein, overcome the rejections based on Section 102.

C. Rejections under 35 U.S.C. § 103(a)

Claim 11 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Izraelev* in view of *Viole* (U.S. Patent No. 6,610,004), claims 13-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Izraelev*, claims 5 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schulte Eistrup* in view of *Viole* or *Jarvik* (U.S. Patent No. 4,994,078), and claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over *Schulte Eistrup* in view of *Zafirelis* (U.S. Patent No. 6,808,508). Applicant respectfully traverses.

Viole was cited as teaching "a housing with openings having a cage-like arrangement to shield the pump blades" (Office Action, page 4). *Viole* describes "an extracardiac pumping system for supplementing the circulation of blood through the patient *without* any component thereof being connected to the patient's heart or primary vessel" (Col. 6, ll. 31-35).

Jarvik was cited as teaching "inserting a cannula into the aortic wall and across the aortic valve". The Intraventricular Artificial Heart of *Jarvik* is implanted through major surgery due to its placement within the heart.

Zafirelius was cited as teaching "a transseptal cannula placed through the atrial septum for returning oxygenated blood to the arterial system of the patient" (Office Action, page 6). "The present invention [of *Zafirelius*] is related to an extracorporeal blood pump, connected to the transseptal cannula at the pump inlet and the perfusion cannula at the pump outlet, that pumps blood at specified flow rates" (Col. 1, ll. 10-13).

Neither *Viole*, *Jarvik*, nor *Zafirelius* overcome the identified problems with *Izraelev* and *Schulte Eistrup*. None of the identified references teach or suggest "a pump housing configured to be inserted into a heart of the patient using a minimally invasive procedure, said pump housing having . . . a rotor chamber extending between said two blood inlets and said blood outlet; and a rotor disposed within said rotor chamber of said pump housing and operable to draw blood into said two blood inlets and direct blood out said blood outlet" as recited in independent claim 1 or "a pump housing having at least two blood inlets, at least one blood outlet, and a rotor chamber extending between said two blood inlets and said blood outlet, each of said at least two blood inlets tapering from a first end toward a second end, said second end communicating with said rotor chamber" as recited in independent claim 16 (emphasis added).

Accordingly, Applicant respectfully submits that pending claims 5-7, 11, and 13-15 and new claims 16-20, as amended and presented herein, are neither disclosed in *Izraelev*, *Schulte Eistrup*, *Viole*, *Jarvik*, or *Zafirelius* nor obvious variations of the devices disclosed therein. Accordingly, it is respectfully submitted that claims 5-7, 11, and 13-15, and new claims 16-20, as amended and presented herein, overcome the rejections based on Section 103.

D. Summary and Conclusion

In view of the foregoing, Applicant respectfully submits that the other rejections to the claims are now moot and do not, therefore, need to be addressed individually at this time. It will be appreciated, however, that this should not be construed as Applicant acquiescing to any of the purported teachings or assertions made in the last action regarding the cited art or the pending application, including any official notice. Instead, Applicant reserves the right to challenge any of the purported teachings or assertions made in the last action at any appropriate time in the

future, should the need arise. Furthermore, to the extent that the Examiner has relied on any Official Notice, explicitly or implicitly, Applicant specifically requests that the Examiner provide references supporting the teachings officially noticed, as well as provide the required motivation or suggestion to combine references with the other art of record.

For at least the foregoing reasons, Applicant respectfully submits that the pending claims are neither anticipated by nor made obvious by the art of record. In the event that the Examiner finds and remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 26th day of September, 2007.

Respectfully submitted,

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